

Pink

Site:	Cherokee County
ID #:	KC 0980741862
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Other:	Comments
	2-13-89

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Englewood, Colorado 80111

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SUPERFUND RECORDS

04-05

2/13/89

Dear Dr. Geitner:

Enclosed are the U.S. Environmental Protection Agency's (EPA) comments on the "Draft Interim Report, Technical Assistance for the Galena Subsite Mine Waste Characterization Program, October 1988." The EPA's comments should be incorporated into the final report. The final report should be attached to the supplemental ground water/surface water OUFS report in an Appendix.

Sincerely yours,

Alice C. Fuerst  
Remedial Section  
Superfund Branch  
Waste Management Division

Enclosure

WSTM:SPFD:REMD:Fuerst:du FUE6-21 2/8/89

REMD  
Fuerst

REMD  
Wright

SPFD  
Sanderson

Pink

EPA Comments on the Draft Interim Report  
Technical Assistance for the Galena Subsite  
Mine Waste Characterization Program,  
October 1988

1. Page 1, line 15 - The words "bull rock and development rock only; no chat" should be removed. The EPA preferred plan included all the mine waste rock, it was just the cost estimate that did not include the chat.
2. Page 2, lines 3-4 - The sentence should be reworded as follows: "... those areas in the subsite containing the bulk of the mine wastes."
3. Page 2, first full sentence - The sentence referring to why chat was not in the estimate, should be removed.
4. Page 2, last paragraph - a) The first sentence is unclear on whether the XRF was used to "focus" the sampling or the treatment to areas of more significant contamination. This should be clarified. b) The whole paragraph should be reworded to not enhance the discussion on the chat. Remember, EPA's preferred plan included chat. The additional sampling noted in the previous paragraph and the metallurgical test work included both chat and other mine wastes.
5. Page 3, last sentence - This last sentence should be removed from the introduction because the paragraph already states that the report includes recommendations for future work.
6. Page 4, lines 5-8 - The sentence should be reworded as follows: "... were left on the surface and underground by mining activities were determined to be a major source of the metal contaminants found in the surface water and ground water systems." We want this changed because some of the mine wastes were left underground and not brought to the surface. The other change is because this report is about processing this mine wastes, so residual mineralization is not important for this report.
7. Page 4, paragraph 2 - The public health assessment did not find ingestion of surface water to be a problem at the site. This should be corrected in the first sentence.
8. Page 5, line 5 - Are all the dissolved metals the result of acid mine drainage? Please think about this and revise if necessary. The PRPs made a comment that all the contamination is not due to "acid mine drainage".

WSTM:SPFD:REMD:Fuerst:ch FUE7-19 2/7/89

9. Page 5, second full paragraph - The paragraph should include the date the GW/SW OUFS was completed, since the date the AWS OUFS was completed was included in the previous paragraph.
10. Page 6, line 8 - The preferred remedy was to process the surface mine wastes, not "some" of the surface mines wastes. A correction should be made.
11. Page 6, first full paragraph - The third and fourth sentences need to be removed. The difference in the volume can be discussed later in the text.
12. Page 7, line 2 - The OUFS included plugging of wells only, not wells and boreholes. This sentence should be reworded.
13. Page 7, last sentence - The sentence, "Chat was not included...", should be removed.
14. Page 9, first full paragraph - Sentence 2 & 3 and the first part of sentence 4 should be removed. The paragraph should read as follows:

During the field work, a portable x-ray fluorescence (XRF), calibrated using known standards, was used to semi-quantitatively identify lead and zinc concentrations in various types of mine wastes in the field. A sample of chat, from a pile analyzing high in lead, was collected to represent the low grade sample required for metallurgical testing.

The text should also state that from field test of the chat and the lab test of the other mine wastes, it was known that the chat contained a lower concentration of lead than the other wastes. That was why it was used as the low grade sample.

15. Page 9, second full paragraph - a) The third line should be revised as follows "...and minus 80 mesh (180u) fractions ...". b) The third sentence needs to be revised because EPA does not agree that 80 mesh is a problem via the inhalation route. Defense mechanisms in the human body are adequate to remove inhaled particles in excess of 2.5 um in diameter. The minus 80 mesh fraction may be windblown and ingested, but inhalation is not a problem. A change is needed.
16. Page 11, sentence 2 - The preferred plan included chat, not just the bull rock and development rock. This sentence should be removed.
17. Page 12, line 3 - The typo should be corrected.

18. Page 12, last 2 lines - The lines concerning the possible health risks of chat should be removed.
19. Page 13, lines 1-3 - These lines should be removed.
20. Page 13, paragraph 1 - The paragraph should be revised to something like the following:

Using the XRF, a large chat pile on the south side is Hell's Half Acre was chosen for the low grade sample material. This chat pile had field assayed for lead near the surface at 600-700 ppm, and at depths of 1-2 feet, between 1600-2500 ppm. In addition to the low & high grade samples, several samples at chat were collected. Both the bulk chat samples and the minus 80 mesh (180u) fraction of the chat samples were analyzed for lead and zinc content.

21. Somewhere the report should explain the difference between metallurgical testing, regular analyses and assays.
22. Page 13, line 17 - Is "number 07-01" the sample number or the pile number? Please clarify.
23. Page 13, line 21 - Never cite a draft report.
24. Be consistent with the units, ppm or mg/kg or percentage. When citing the screen size, also indicate the micron size of the particles passing through the screen.
25. Page 14, paragraph 1 - a) Explain what head analysis is. b) The second sentence explains why dry screening was conducted but it leaves a questions, dry screening vs. wet screening? Please clarify. c) The third sentence gives the analytical results on the minus 80 mesh results, not the results of the screening. The sentence should be reworded. d) Never cite a draft report. All the test work should be included in this report so an analyses report does not need to be referred to. e) How many samples were they split into? The report says four in one place and five in another place.
26. Page 14, paragraph 2 - a) Was the wet screen analyses done on one of the two portions of the sample in the proceeding paragraph? Please explain. b) What size fraction was the 12 percent of the material that contained 72 percent of the lead? Please specify.
27. Page 14, last paragraph - a) It is unnecessary to state that the head analysis was supplied by the subcontracting laboratory. All analyses were conducted by a contract laboratory as described earlier. b) The first sentence is unclear. Were the results of the metallurgical testing

lower than the XRF field testing? "Sampling" does not make sense. c) The sentence goes on to give the results of the lab work, but not the XRF work. If we are suppose to compare the results, both should be given. d) The significance of the difference in the lab and field testing should be explained.

28. Page 15, sentence 6 - Do not state that you are re-evaluating the standards and investigating possible problems. The reason for the difference should be explained. The sentence 7 is probably unnecessary. If sentence 7 remains, the reason for specifying 1,000 ppm should be explained.
29. Page 16, line 2 - The first full sentence appears out of place.
30. Page 16, Table 1 - a) Are samples 07-01-01 and 07-01-02 the same samples or just from the same pile? This should be clarified. b) It should be explained that the low grade mine waste sample is also a chat sample.
31. Page 17, paragraph 3 - Is there a better description of the "special chelating agents" in the Hazen report? The EPA paid to know what the agents are, so it should be reported at least in the Hazen report.
32. Table 2 - A simpler table is needed because all the conditions have not been discussed in the report.
33. Page 18, paragraph 1 - The last sentence, "This technology is important if chat processing is required", should be removed because the preferred plan included chat.
34. Page 18, paragraph 2 - The last sentence should be revised as follows: "Additional test work is needed in this area if the procedure is to be used in the remediations." This same change is needed in the third paragraph.
35. Page 18, paragraph 3 - Was the low grade sample screened and then mixed with the high grade sample or was the bulk low grade sample mixed with the high grade material? Please clarify.
36. Page 19, line 5 - The typo should be corrected.
37. Page 21, Table 4 - a) EP Toxicity limits are not applicable to this site, therefore, the words "allowable discharge limits" should be removed. The column should be labeled as "EP Toxicity Standards, ppm." b) It is confusing to have the Tailings Analyses results reported in percent, and the EP Toxicity testing in ppm. Were the tailings analyzed for

more than just lead? If so, more should be reported and it should be in ppm. This probably should be on a separate table and should explain the difference between analysis of tailing and EP Toxicity test of tailings.

38. Page 22, paragraph 1 - Reword this paragraph so not to state that tailings exceeded allowable limits. State that the results were greater than the EP Toxicity Standards. The paragraph should explain that zinc is not one of the elements in the EP Toxicity test.
39. Page 22, Table 5 - Table 5 leaves a question on why only the results from tests 10, 11, 12 and 13 are reported. Similar questions arise on the other tables. Are you reporting all the data or just what you want to publish? All the data should be included in the report. Explain why data not reported on the other test run, i.e., test run did not include these particular data.
40. Page 23, last sentence - The last word should be changed from "waste" to "substance" because the sludge would be exempt from the definition of a hazardous waste.
41. Page 24, first sentence - The first sentence needs to be reworded because the preferred alternative is not in the OUFS.
42. Page 24, paragraph 1 - a) Since a mini-feasibility study was done, information from it should be provided, not just the conclusions. The calculations done should be in this report. b) A map showing the potential locations of the two plants should be included. c) This paragraph mentions the two plants before the thought of two plants is introduced into the report. The order needs to be revised.
43. Page 25, paragraph 1 - A revision is needed in sentence 7; the trash will be removed, not the areas.
44. Page 27, paragraph 1 - Is it correct that the waste rock will be crushed to minus two inches, but only material of minus 3/8 inch will go on to the next step? Explain further.
45. Page 27, paragraph 3 - What is the "remaining plant?" There needs to be more explaining if there are several plants.
46. Page 27, paragraph 4 - a) Why are the words "if required" in the third line? The chat will be processed, the question is whether it is mixed with the other waste rock or processed separately. b) Explain where the process water would come from.

47. Page 28, paragraph 2 - In the first sentence it should be made clearer that the lead sulfide circuit and the zinc sulfide circuit are two separate circuits.
48. Page 29 - There are at least three typos on this page. Line 4, "vary". Line 25, "lead, the, failing". Last line, "In not a".
49. Page 29, paragraph 2 - a) "Lead criteria" in line 10 should be changed to "disposal criteria", b) The sentence beginning on line 11 should be revised as follows: "The tailing could be checked with XRF to determine metal concentrations prior to disposal." This change is needed because disposal criteria have not been defined.
50. Page 30, first full paragraph - a) The ownership of the chat is not an issue for this report. Its discussion should be removed. b) There should be an explanation that some of the chat may be clean and would not need processing.
51. Page 30, second full paragraph - If a mini-feasibility study is mentioned, calculations, or whatever was done in the mini-feasibility study, need to be included in this report.
52. Page 32, paragraph 1 - The information on the milling was in the OUFS not the "RI/FS". This correction is needed.
53. Page 32, paragraph 3 - There should be an explanation on why the volume increased from 327,000 tons to 500,000 tons. At the same time, explain that the original volume estimate did not include chat and report the new estimated volume.
54. Page 32, paragraph 6 - This is the first time this was discussed. Further explanation is needed.
55. Page 33, paragraph 1 - The OUFS report stated that both chat and other mine wastes would be processed. Because of that, this paragraph is incorrect and should be revised.
56. Page 33 paragraph 2 - This is the first time the report really says that the lead and zinc are concentrated in the ultra fines. This should be stated more clearly earlier in the report. Does this paragraph refer only to the chat? Please clarify.
57. Page 33, paragraph 3 - Earlier in the report, the report says more work is needed to determine if the fines and mine waste can be fed together. This paragraph infers that it can be done, maybe a revision is needed.
58. Page 33, paragraph 4 - The paragraph on chat should report the currently known information.
59. Page 34, Table \_\_\_\_ - a) A table number is needed. b) What

was the cost per ton for the hauling cost in the OUFS?  
This should be stated.

60. Page 34, paragraph 1 - The statement concerning the PRPs' cost estimate should be removed.
61. Page 35, paragraph 1 - The discussion about the chat should be revised. The impact is not whether the chat should be processed, but the impact is based on volume estimates. The OUFS and proposed plan said the chat was included. Could you state that the costs could be lower if the chat is screened and not all of it has to be processed?



## Hazen Report

1. Page 1, last paragraph - The milling of the wastes is the preferred alternative, not the selected alternative. The preferred remedy also includes other activities. The tailings would be disposal of in the mine voids, not used as backfill. The EPA would hope to sell the concentrates, but that is not a known fact; concentrates "may" be sold to metal processors. These statements should be corrected.
2. Page 2, paragraph 1 - EP Toxicity has not been set as the discharge limit; therefore, state: "... final tailings that would contain metals in concentrations less than the EP Toxicity standards".
3. Page 3, Table 1 - Do not mix "percentages" and "ppm" on the same table. Where did these analyses come from? The first sentence states that CH2M Hill provided the data.
4. Page 4, Table 1 - It is unclear what the column "rec'y" refers to. It should be clarified.
5. Page 4, paragraph 3 - Change the statement on EP Toxicity. EP Toxicity is not the discharge limits, it is a criteria to examine the tailings.
6. Page 4, Table 2 - The second column should be labeled EP Toxicity standards. Are the "Coarsest Grind" both low grade ore tests? If not, please clarify.
7. Page 5, paragraph 1 - The first sentence should be reworded as follows: "The tailings from each of the high and low grade ore samples in at least one test contained metals below the EP Toxicity standards".
8. Page 6, paragraph 3 - How many portions were the chat samples split into? The CH2M Hill report says four, the Hazen Report says five. Please correct as necessary.
9. Page 7, paragraph 1 - a) CLP is "Contract Lab Program," not "procedures". A correction is needed. b) The various analytical procedures are not appended in EPA's copy of the report and should be. c) Copies of the certificates should be submitted separately.
10. Page 7, paragraph 2 - Are the grindability tests on Table 2 in the back of the report? If so, the test should refer the reader to Table 2. If not, the information needs to be added.
11. Page 8, paragraph 3 - The CLP protocols are EPA protocols, so the fifth sentence only needs to state that EPA protocols were used.

12. Page 9, line 3 - Did the water contain 0.1 ppm lead or less than 0.1 ppm lead? Table 9 does not say "less than". The table and text should be consistent.
13. Page 9, paragraph 6 - The two xanthates used in the zinc circuit should be specified.
14. Page 11, paragraph 1 - How did CH2M Hill come up with the percentages of lead and zinc needed to pass EP Toxicity tests? More information is needed to explain this.
15. Page 11, last paragraph - Specify the type of xanthate collectors used.
16. Page 13, High Grade Sample Results and Page 14, Low Grade Sample Results - What test finally got the lead and zinc recoveries so that the tailings passed EP Toxicity standards? The paragraph should clearly identify the test number and the process used.
17. Page 15, paragraph 2 - Revise the wording pertaining to EP Toxicity Standards.
18. Table 1 - a) The results from Analytic need to be added. b) The following need to be defined: S(t), Pb(t), Pb(ox), Pb(s), Zn(t), Zn(ox), Zn(s). c) Are all the results reported in percentages or in ppm? Be consistent. d) The meaning of the dash or blank in columns should be explained.
19. Tables 9 and 10 - a) The water was not analyzed for zinc and cadmium, therefore, the results should not be reported as 0. b) The detection limits should be specified.